**K-5 Math Lesson Plan**

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| **Teacher: Beyrer** | | | **Grade: 5th Grade** | | | **Date(s)**: Aug 2012 |
| **Unit Title:** Unit 1- Understand the Decimal Place Value System | | | | **Corresponding Unit Task:** Summer Olympic  **(teach prior to task 4)** | | |
| **Essential Question(s):** What happens to the decimal when you multiply or divide by powers of ten? | | | | | | |
| **Materials/Resources** | | | | **Essential Vocabulary** | | |
| **Teacher:**  White boards, video, Power of ten chart, Reflect in the past WS. Matching cards, Homework | | **Student:**  White boards, marker, pencils, journal | | | Powers of ten, exponents, decimal, equation. | |
| **Learning Experience** | | | | | | |
| **8 Mathematical Practices:**  √ 1. Make sense of problems and persevere in solving them.  2. Reason abstractly and quantitatively.  √ 3. Construct viable arguments and critique the reasoning of others.  √ 4. Model with mathematics.  √ 5. Use appropriate tools strategically.  √ 6. Attend to precision.  √ 7. Look for and make use of structure.  √ 8. Look for and express regularity in repeated reasoning. | **Common Core State Standards:** 5.NBT.2 Numbers and Operations in Base Ten – Explain patterns in the number of zeros of the product when multiplying a number by powers of 10. Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. | | | | | |
| **I Can Statement(s):** I can explain in patterns in the product when multiplying by powers of ten. I can explain patterns in the placement of the decimal point when multiplying by the powers of ten. I can explain patterns in the placement of the decimal point when dividing by powers of ten. | | | | | |
| **Activating Strategy/Hook:** (How will students become cognitively engaged and focused?)  Power of Ten video <http://teachertube.com/viewVideo.php?video_id=119236> | | | | | |
| **Teacher Directed:** Students copy the Powers of ten chart the teacher builds on the white board, overhead or computer.  Powers of 10 Chart   |  |  |  |  | | --- | --- | --- | --- | | Number Name | Multiplication | Number | Power of 10 | | Ten | 10 x 1 | 10 | 1  10 | | Hundred | 10 x 10 | 100 | 2  10 | | Thousand | 10 x 10 x 10 | 1,000 | 3  10 | | Ten Thousand | 10 x 10 x 10 x 10 | 10,000 | 4  10 | | Hundred Thousand | 10 x 10 x 10 x 10 x 10 | 100,000 | 5  10 | | Million | 10 x 10 x 10 x 10 x 10 x 10 | 1,000,000 | 6  10 | | | | | | |
| **Guided Practice:** Exponent Discover Game: Three students stand in front of the class with white boards displaying the number 35 with each digit and the decimal on separate white boards. There are three additional students (1, 2, 3) at the large white board. Teacher directs student (1) to write 35 x 1. Student (1) Then writes 35 x 10.An additional student joins the students with the individual boards with a 0 on their board. Teacher shows the class where that student needs to stand to make the 35 become 350. Student (1) then writes 35 x 10 x 10. An additional student with individual board with a 0 is added to the 350. Teacher leads them to recognizing an easier way to write 10 x 10 is 100. Student (2) writes 35 x 100 on the board. Continue adding zeros. At 3500 the teacher will lead the class to recognize another way to write 10 x10 x 10 or 1000 is 10 to the power of 3. Student (3) writes 35 x 10 to the power of 3. As a zero is added to the line of individual boards students (1, 2, 3) write the corresponding equations. Teacher will continue to the power of 6.  The teacher then has the “zeros” sit down and go back to 35. The teacher asks the students what happened to the decimal each time we multiplied by 10. (decimal moved to the right one place). The teacher then asks what the students think would happen if you divided by 10. Then direct them to the decimal moving one place to the left. Student writes 35/1=35 and 35/10. Teacher moves to divided by 100. Shows moving of decimal. Student 1 writes 35/10/10 Student (2) writes 35/100. Student (3) writes 35/10 to the power of 2. Teacher repeats to dividing by power of 3. | | | | | |
| **Independent Practice:** Reflect on the past Worksheet in CC Unit 1 | | | | | |
| **Closing/Summarizing Strategy:** Exponent Matching cards in CC Unit 1 | | | | | |
| **Differentiation Strategies** | | | | | | |
| **Extension** | | | **Intervention** | | | **Language Development** |
| * Number of dice and placement of the decimal may be adjusted in the homework assessment. * Higher powers can be added to Independent practice, and HW assessment. | | | * Independent practice of Reflect on the Past may be done in teacher directed small group. | | | * Abbreviated form of task provided after the original task if needed.   **Writing to Learn:** After key points in the unit (after each task?), have students write in a journal using the following sequence:   * *Record*: state what they have learned * *Compar*e: Students pair up and compare what they have written and clarify. * *Revise*: Based on the interaction, students create a more developed and polished version of their statements. * *Combine*: Students collaborate to mesh their summaries * *Review*: Students use previous entries to prepare and guide them through subsequent tasks.   (Adapted from “Writing to Learn” by Robert Marzano in Educational Leadership, February 2012.) |
| **Assessment(s):**  Powers of 10 dice game attached below | | | | | | |
| **Teacher Reflection:** (Next steps?)  Student understanding/misconceptions  Specific notes about students’ thinking  What do I need to reteach/review tomorrow or in the future? | | | | | | |

**Powers of 10**

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_

Directions: Take turns rolling two die. Write the number you rolled in the correct column labeled “number rolled (n)”. Fill in the remaining columns with the correct number by multiplying or dividing by powers of ten.

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| 3  n/10 | 2  n/10 | 1  n/10 | Number  Rolled  (n) | 1  n x 10 | 2  n x 10 | 3  n x 10 | 4  n x 10 | 5  n x 10 |
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